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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

August 27, 2004

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Substitute for form 1449A/PTO	Application Number	09/965,370
NIDDI ÉMENTAL INCODARZION	Filing Date	September 26, 2001
DISCLOSURE STATEMENT BY	First Named Inventor	Chung, et al.
	Group Art Unit	1762
APPLICANT	Examiner Name	Eric B. Fuller
\$	Attorney Docket Number	AMAT/6303/CPI/COPPER/PJS

Submission Date

	U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No.1	Document Number  Number-Kind Code <sup>2 (f known)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
EF	A1	US-6686271 B2	02/03/2004	Raaijmakers, et al.	Figures Appear
i	A2	US-6660660 B2	12/09/2003	Haukka, et al.	
	A3	US-6632279 B1	10/14/2003	Ritala, et al.	
	A4	US-6630201 B2	10/07/2003	Chiang, et al.	
	A5	US-6620956 B2	09/16/2003	Chen, et al.	
	A6	US-6620723 B1	09/16/2003	Byun, et al.	
	A7	US-6620670 B2	09/16/2003	Song, et al.	
	A8	US-6607976 B2	08/19/2003	Chen, et al.	
	A9	US-6599572 B2	07/29/2003	Saanila, et al.	
.	A10	US-6585823 B1	07/01/2003	Van Wijck	
	A11	US-6569501 B2	05/27/2003	Chiang, et al.	
	A12	US-6551929 B1	04/22/2003	Kori, et al.	
	A13	US-6548424 B2	04/15/2003	Putkonen	
	A14	US-6534395 B2	05/18/2003	Werkhoven, et al.	<u> </u>
	A15	US-6511539 B1	01/28/2003	Raaijmakers	
	A16	US-6489214 B2	12/03/2002	Kim, et al.	·
	A17	US-6482740 B2	11/19/2002	Soininen, et al.	
	A18	US-6482733 B2	11/19/2002	Raaijmakers, et al.	
	A19	US-6482262 B1	11/19/2002	Elers, et al.	
	A20	US-6478872 B1	11/12/2002	Chae, et al.	
	A21	US-6475910 B1	11/05/2002	Sneh	
	A22	US-6475276 B1	11/05/2002	Elers, et al.	
	A23	US-6468924 B1	10/15/2002	Maejima	
	A24	US-6464779 B1	10/15/2002	Powell, et al.	
	A25	US-6458701 B1	10/15/2002	Marsella, et al.	
	A26	US-6451695 B2	09/17/2002	Sneh	
	A27	US-6451119 B2	09/17/2002	Sneh, et al.	
EC	A28	US-6428859 B1	08/06/2002	Chiang, et al.	

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Application Number	09/965,370
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Examiner Initials*	Cite No.1	Document Number	Publication Date	Name of Patentee or	Pages, Columns, Lines, Where
imitais	NO.	Number-Kind Code <sup>2 (6 known)</sup>	MM-DD-YYYY	Applicant of Cited Document	Relevant Passages or Relevant Figures Appear
EF	A29	US-6416822 B1	07/09/2002	Chiang, et al.	
	A30	US-6416577 B1	07/09/2002	Suntoloa, et al.	
	A31	US-6399491 B2	06/04/2002	Jeon, et al.	
	A32	US-6391785 B1	05/21/2002	Satta, et al.	
	A33	US-6379748 B1	04/30/2002	Bhandari, et al.	
	A34	US-6372598 B2	04/16/2002	Kang, et al.	
	A35	US-6358829 B2	03/19/2002	Yoon, et al.	
	A36	US-6348376 B2	02/19/2002	Lim, et al.	
	A37	US-6342277 B1	01/29/2002	Sherman, et al.	
	A38	US-6335240 B1	01/01/2002	Kim, et al.	
	A39	US-6284646 B1	09/04/2001	Leem	
	A40	US-6242808 B1	06/05/2001	Shimizu, et al.	
	A41	US-6207487 B1	03/27/2001	Kim, et al.	16.0
	A42	US-6197683 B1	03/06/2001	Kang, et al.	
	A43	US-6015917	01/18/2000	Bhandari, et al.	
	A44	US-5913147 .	06/15/1999	Dubin, et al.	
	A45	US-5526244	06/11/1996	Bishop	
	A46	US-5464666	11/07/1995	Fine, et al.	
	A47	US-5374570	12/20/1994	Nasu, et al.	<del>*************************************</del>
	A48	US-5306666	04/26/1994	Izumi	
	A49	US-3594216	07/20/1974	Charles, et al.	
	A50	US-20040053484 A1	03/18/2004	Kumar, et al.	
	A51	US-20040051152 A1	03/18/2004	Nakajima	-
	A52	US-20040048491 A1	03/11/2004	Jung, et al.	
	A53	US-20040046197 A1	03/11/2004	Basceri, et al.	***************************************
	A54	US-20040043630 A1	03/04/2004	Vaartstra, et al.	· · · · · · · · · · · · · · · · · · ·
	A55	US-20040033698 A1	02/19/2004	Lee, et al.	
CS	A56	US-20040028952 A1	02/12/2004	Cartier, et al.	

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	INO.	Number-Kind Code <sup>2 (# known)</sup>	MM-DD-YYYY	Applicant of Cited Document	Relevant Passages or Relevant Figures Appear
EC	A57	US-20040018747 A1	01/29/2004	Lee, et al.	
	A58	US-20040018723 A1	01/29/2004	Byun, et al.	
	A59	US-20040018304 A1	01/29/2004	Chung, et al.	
	A60	US-20040016866 A1	01/29/2004	Huang, et al.	
	A61	US-20040015300 A1	01/22/2004	Ganguli, et al.	
-	A62	US-20040014320 A1	01/22/2004	Chen, et al.	
	A63	US-20040013803 A1	01/22/2004	Chung, et al.	
	A64	US-20040011504 A1	01/22/2004	Ku, et al.	
	A65	US-20040009307 A1	01/15/2004	Koh, et al.	
	A66	US-20030235961 A1	12/25/2003	Metzner, et al.	
	A67	US-20030232554 A1	12/18/2003	Blum, et al.	
	A68	US-20030227033 A1	12/11/2003	Ahn, et al.	
	A69	US-20030224600 A1	12/04/2003	Cao, et al.	
	A70	US-20030224578 A1	12/04/2003	Chung, et al.	
	A71	US-20030216981 A1	11/20/2003	Tillmann	
	A72	US-20030213987 A1	11/20/2003	Basceri, et al.	
	A73	US-20030205729 A1	11/06/2003	Basceri, et al.	
	A74	US-20030198754 A1	10/23/2003	Xi, et al.	
	A75	US-20030190804 A1	10/09/2003	Glenn, et al.	
	A76	US-20030190497 A1	10/09/2003	Yang, et al.	
	A77	US-20030190423 A1	10/09/2003	Yang, et al.	
	A78	US-20030186495 A1	10/02/2003	Saanila, et al.	
	A79	US-20030185980 A1	10/02/2003	Endo	
	A80	US-20030173586 A1	09/18/2003	Moriwaki, et al.	
	A81°	US-20030172872 A1	09/18/2003	Thakur, et al.	
•	A82	US-20030168750 A1	09/11/2003	Basceri, et al.	
1	AB3	US-20030165615 A1	09/04/2003	Aaltonen, et al.	
EC.	A84	US-20030160277 A1	08/28/2003	Bhattacharyya	

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY

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	00/005 070
Application Number	09/965,370
Filing Date	September 26, 2001
First Named Inventor	Chung, et al.
Group Art Unit	1762
Examiner Name	Eric B. Fuller
Attorney Docket Number	AMAT/6303/CPI/COPPER/PJS
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		Number-Kind Code <sup>2 (F krown)</sup>	MM-DD-YYYY	YY Applicant of Cited Document	Relevant Passages or Relevant Figures Appear
EF	A85	US-20030143841 A1	07/31/2003	Yang, et al.	
	A86	US-20030143839 A1	07/31/2003	Raaijmakers, et al.	
	A87	US-20030143328 A1	07/31/2003	Chen, et al.	
	A88	US-20030134508 A1	07/17/2003	Raaijmakers, et al.	
	A89	US-20030129826 A1	07/10/2003	Werkhoven, et al.	
	A90	US-20030129308 A1	07/10/2003	Chen, et al.	
	A91	US-20030124262 A1	07/03/2003	Chen, et al.	
	A92	US-20030121608 A1	07/03/2003	Chen, et al.	
	A93	US-20030116804 A1	06/26/2003	Visokay, et al.	
	A94	US-20030116087 A1	06/26/2003	Nguyen, et al.	
	A95	US-20030108674 A1	06/12/2003	Chung, et al.	
	A96	US-20030106490 A1	06/12/2003	Jallepally, et al.	
	A97	US-20030101927 A1	06/05/2003	Raaijmakers	
	A98	US-20030097013 A1	05/22/2003	Chen, et al.	
	A99	US-20030096468 A1	05/22/2003	Soininen, et al.	,
	A100	US-20030089942 A1	05/15/2003	Bhattacharyya, et al.	
	A101	US-20030089308 A1	05/15/2003	Raaijmakers	
	A102	US-20030082307 A1	05/01/2003	Chung, et al.	
	A103	US-20030082301 A1	05/01/2003	Chen, et al.	
	A104	US-20030082300 A1	05/01/2003	Todd, et al.	
	A105	US-20030082296 A1	05/01/2003	Elers, et al.	
	A106	US-20030079686 A1	05/01/2003	Chen, et al.	
	A107	US-20030072975 A1	04/17/2003	Shervo, et al.	
	A108	US-20030072884 A1	04/17/2003	Zhang, et al.	· · · · · · · · · · · · · · · · · · ·
	A109	US-20030059538 A1	03/27/2003	Chung, et al.	
	A110	US-20030057527 A1	03/27/2003	Chung, et al.	
	A111	US-20030057526 A1	03/27/2003	Chung, et al.	
E(1)	A112	US-20030054631 A1	03/20/2003	Raaijmakers, et al.	

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EF	A113	US-20030053799 A1	03/20/2003	Lei			
	A114	US-20030049942 A1	03/13/2003	Haukka, et al.			
	A115	US-20030049931 A1	03/13/2003	Byun, et al.			
	A116	US-20030042630 A1	03/06/2003	Babcoke, et al.			
	A117	US-20030032281 A1	02/13/2003	Werkhoven, et al.			
	A118	US-20030031807 A1	02/13/2003	Elers, et al.			
	A119	US-20030015764 A1	01/23/2003	Raaijmakers, et al.			
•	A120	US-20030013320 A1	01/16/2003	Kim, et al.			
	A121	US-20030013300 A1	01/16/2003	Вуил			
	A122	US-20020197881 A1	12/26/2002	Ramdani, et al.			
	A123	US-20020197863 A1	12/26/2002	Mak, et al.			
	A124	US-20020197402 A1	12/26/2002	Chiang, et al.			
	A125	US-20020196591 A1	12/26/2002	Hujanen, et al.			
	A126	US-20020187631 A1	12/12/2002	Kim, et al.			
	A127	US-20020187256 A1	12/12/2002	Elers, et al.			
	A128	US-20020182320 A1	12/05/2002	Leskela, et al.			
	A129	US-20020177282 A1	11/28/2002	Song			
	A130	US-20020173130 A1	11/21/2002	Pomerede, et al.			
	A131	US-20020164423 A1	11/07/2002	Chiang, et al.			
	A132	US-20020164421 A1	11/07/2002	Chiang, et al.			
	A133	US-20020162506 A1	11/07/2002	Sneh, et al.			
	A134	US-20020155722 A1	10/024/2002	Satta, et al.			
	A135	US-20020146511 A1	10/10/2002	Chiang, et al.			
	A136	US-20020144657 A1	10/10/2002	Chlang, et al.	· · · · · · · · · · · · · · · · · · ·		
	A137	US-20020144655 A1	10/10/2002	Chiang, et al.			
•	A138	US-20020135071 A1	09/26/2002	Kang, et al.			
	A139	US-20020127336 A1	09/12/2002	Chen, et al.	<del></del>		
FF	A140	US-20020122884 A1	09/05/2002	Chen, et al.			

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EF	A141	US-20020117399 A1	08/29/2002	Chen, et al.				
	A142	US-20020115252 A1	08/22/2002	Haukka, et al.				
	A143	US-20020106846 A1	08/08/2002	Seutter, et al.				
	A144	US-20020106536 A1	08/08/2002	Lee, et al.				
	A145	US-20020106451 A1	08/08/2002	Skarp, et al.				
	A146	US-20020104481 A1	08/08/2002	Chiang, et al.	-			
	A147	US-20020098685 A1	07/25/2002	Sophie, et al.				
	A148	US-20020098627 A1	07/25/2002	Pomarede, et al.				
	A149	US-20020094689 A1	07/18/2002	Park				
	A150	US-20020092584 A1	07/18/2002	Soininen, et al.				
	A151	US-20020086111 A1	07/04/2002	Byun, et al.				
	A152	US-20020081844 A1	06/27/2002	Jeon, et al.				
	A153	US-20020076837 A1	06/20/2002	Hujanen, et al.				
	A154	US-20020076508 A1	06/20/2002	Chiang, et al.				
	A155	US-20020076507 A1	06/20/2002	Chiang, et al.				
	A156	US-20020076481 A1	06/20/2002	Chiang, et al.				
	A157	US-20020074588 A1	06/20/2002	Lee				
	A158	US-20020073924 A	06/20/2002	Chiang, et al.				
	A159	US-20020068458 A1	06/06/2002	Chiang, et al.				
	A160	US-20020052097 A1	05/02/2002	Park				
	A161	US-20020048635 A1	04/25/2002	Kim, et al.				
	A162	US-20020041931 A1	04/11/2002	Suntola, et al.				
	A163	US-20020031618 A1	03/14/2002	Sherman				
	A164	US-20020021544 A1	02/21/2002	Cho, et al.				
	A165	US-20020020869 A1	02/21/2002	Park, et al.				
<u> </u>	A166	US-20020007790 A1	01/24/2002	Park				
	A167	US-20020000598 A1	01/03/2002	Kang, et al.				
EF	A168	US-20010054769 A1	12/27/2001	Raaijmakers, et al.				

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Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevan Figures Appear
Title (1)		Number-Kind Code <sup>2 (f known)</sup>			
13	A169	US-20010054730 A1	12/27/2001	Kim, et al.	
	A170	US-20010050039 A1	12/13/2001	Park -	
L_	A171	US-20010028924 A1	10/11/2001	Sherman	
	A172	US-20010025979 A1	10/04/2001	Kim, et al.	
	A173	US-20010024387 A1	09/27/2001	Raaijmakers, et al.	
	A174	US-20010009695 A1	07/26/2001	Saanila, et al.	
E?	A175	US-20010002280 A1	05/31/2001	Sneh	

		FORE	IGN PATENT	DOCUMENTS		
Examiner Initials*	Cite No.1	Foreign Patent Document  Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>3</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or	Τ°
BP	B1	EP 1,142,894 A2	10/10/2001	Morman, et al.	Relevant Figures Appear	
	B2	EP 1,167,569 A1	01/02/2002	Park		
	В3	EP 954,027 A1	11/03/1999	Edelstein, et al.		
	B4	GB 2,355,727 A	05/02/2001	Samsung Electronics		
	B5	JP 03-234025 (Abstract Only)	10/18/1991	Junichi, et al.		
	В6	JP 07-300649 A	11/14/1995	Haruo		
	B7	JP 2000-031387	01/28/2000	Hisato, et al.		
	В8	JP 2000-58777	02/25/2000	Shoko, et al.		-
	В9	JP 2001-111000	12/26/2002	Jong-Ho, et al.		
	B10	WO 99/01595	01/14/1999	Suntola, et al.		
	B11	WO 99/65064	12/16/1999	Hasper, et al.		
	B12	WO 01/17692 A1	03/15/2001	Raaijmakers		
	B13	WO 01/88972 A1	11/22/2001	Soininen, et al.		
	B14	WO 02/01628 A2	01/03/2002	Byun, et al.		
	B15	WO 02/065525 A1	08/22/2002	Pomarede, et al.		
[	B16	WO 02/067319 A2	08/29/2002	Kim, et al.		
UP	B17	WO 02/08485 A2	01/31/2002	Van Wijck		

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		FOI	REIGN PATENT I	DOCUMENTS		
Examiner Initials*	Cite No.1	Foreign Patent Document  Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>1</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Relevant Figures Appea	or
RF	B18	WO 02/31875 A2	04/18/2002	Haukka, et al.	поготант нувноз дрреа	<u>'</u>
1	B19	WO 02/43115 A2	05/30/2002	Pomarede, et al.		
	B20	WO 02/45167 A2	06/06/2002	Hujanen, et al.		+-
	B21	WO 02/45871 A1	06/13/2002	Chiang, et al.		
50	B22	WO 03/044242 A2	05/30/2003	Chen, et al.		
·		NON P	ATENT LITERATU	RE DOCUMENTS		
Examiner Initials*	Cit No.	1   Item (book, magazine, jo	urnal, serial, sympo r(s), publisher, city a	RS), title of the article (when a sium, catalog, etc.), date, pagand/or country where published (3604-6)	ne(s), volume-issue	T²
	C2	Chang-Wook, et al. "Growth	and Characterization	on of Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ) Korean Inst. Met. Mater., Vo	Thin Films by Plasma- I. 38, No. 10, Oct. 2000	
	СЗ	Clark-Phelps, et al. "Engineer Dielectric Films with Improved 670 (2001)	red Tantalum Alumi d Electrical and The	nate and Hafnium Aluminate rmal Properties," Mat. Res. S	ALD Films for Ultrathin oc. Symp. Proc. Vol.	
	C4	Eisenbraum, et al. "Atomic La copper barrier applications," F Conference (Cat. No. 01EX46	Proceedings of the I	D) of Tantalum-based materia EEE 2001 International Interd	ls for zero thickness connect Technology	
	C5	Hwang, et al. "Nanometer-Siz Pressure Metamorphism," Sci	e α-PbO <sub>2</sub> -type TiO <sub>2</sub> ience Vo. 288 (14 A	in Garnet: A Thermobaromet	ter for Ultrahigh-	
	C6	Juppo, et al. "Deposition of Co Science & Technology, Vol. 1	opper Films by an A 5, No. 4 (July 1997)	ulternate Supply of CuCl and 2	Zn," Journal of Vacuum	
	C7	Kukli, et al. "Atomic Layer Epi Journal of the Electrochemica	taxy Growth of Tant I Society, Vol. 142,	talum Oxide Thin Films from No. 5, May 1995; p. 1670-5	a(OC <sub>2</sub> H <sub>5</sub> ) <sub>5</sub> and H <sub>2</sub> O,"	
	C8	Kukli, et al., "In situ Study of A Ta(OC <sub>2</sub> H <sub>5</sub> ) <sub>5</sub> and H <sub>2</sub> O," Applied	tomic Laver Epitax	v Growth of Tantalum Oxide T	hin Films From 42	
	C9	Kukli, et al., "Properties of {Nb Grown by Atomic Layer Epitax	1-xTaxl>Os Solid Sol	lutions and (Nb, "Ta, laOs 2rO		
	C10	Kukli, et al., "Properties of Ta <sub>2</sub> Epitaxy," Journal of the Electron	O <sub>5</sub> -Based Dielectric	c Nanolaminates Deposited by Vol. 144, No. 1, Jan. 1997; p.	/ Atomic Layer 300-6	
ÉP	C11	Kukli, et al., "Tailoring the Diel Letters, Vol. 68, No. 26, June 1 No. 1	ectric Properties of	HfO2-Ta2-Os Nanolaminates '	Annied Physics	

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September 26, 2001 Filing Date First Named Inventor Chung, et al. 1762 Group Art Unit **Examiner Name** Eric B. Fuller Attorney Docket Number AMAT/6303/CPI/COPPER/PJS

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		NON PATENT LITERATURE DOCUMENTS	
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SF	C12	Martensson, et al. "Cu₂ as Copper Source in Atomic Layer Epitaxy," Chemical Vapor Deposition. Proceedings of the Fourteenth International Conference and EUROCVD-11 (1997), pp. 1529-36	
	C13	Martensson, et al. "Use of Atomic Layer Epitaxy for Fabrication of Si/TiN/Cu Structures," Journal of Vacuum Science & Technology, Vol. 17, No. 5 (Sept 1999), pp.2122-8	
	C14	Paranipe, et al. "Atomic Layer Deposition of AlO <sub>3</sub> for Thin Film Head Gap Applications," J. Elec. Soc., Vol. 148, No. 9 Sept., 2001 pp. G465-471	
	C15	Proceedings of the IEEE 1998 International Interconnect Technology Conference – San Francisco, California, June 1-3, 1998	
	C16	Ritala, et al. "Atomic Force Microscopy Study of Titanium Dioxide Thin Films Grown by Atomic Layer Epitaxy," Thin Solid Films, Vol. 228, No. 1-2 (15 May 1993), pp.32-35	
	C17	Ritala, et al. "Atomic Layer Deposition of Oxide Thin Films with Metal Alkoxides as Oxygen Sources," Science Vol. 288 14 Apr 2000	
	C18	Ritala, et al. "Atomic Layer Epitaxy Growth of TiN Thin Films From Til <sub>4</sub> and NH <sub>3</sub> ," J. Electrochem. Soc., Vol. 145, No. 8 (Aug, 1998) pp. 2914-20	·
	C19	Ritala, et al. "Effects of Intermediate Zinc Pulses on Properties of TiN and NbN Films by Atomic Layer Epitaxy," Applied Surface Science, Vol. 120, No. 3-4, (Dec. 1997), pp. 199-212	
	C20	Ritala, et al. "Growth of Titanium Dioxide Thin Films by Atomic Layer Epitaxy," Thin Solid Films, Vol. 225, No. 1-2 (25 March 1993) pp. 288-95	
	C21	Ritala, et al. "Surface Roughness Reduction in Atomic Layer Epitaxy Growth of Titanium Dioxide Thin Films," Thin Solid-Films, Vol. 249, No. 2 (15 Sept. 1994), pp. 155-62	
	C22	Rossnagel, et al. "Plasma-enhanced Atomic Layer Deposition of Ta and Ti for Interconnect Diffusion Barriers," J. Vacuum Sci. & Tech. B., Vol. 18, No. 4 (July 2000), pp. 2016-20	
	C23	Utriainen, et al. "Studies of Metallic Thin Film Growth in an Atomic Layer Epitaxy Reactor Using M(acac)₂(M=Ni,Cu, Pt) Precursors," Applied Surface Science, Vol. 157, No. 3 (2000), pp 151-158	
	C24	International Search Report for PCT/US02/28715 dated May 30, 2003 (AMAT/6303-PCT)	
E17	C25	PCT Written Opinion for PCT/US02/28715 DATED July 28, 2004 (AMAT/6303-PCT)	

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